### (19) World Intellectual Property Organization

International Bureau





## (43) International Publication Date 2 June 2005 (02.06.2005)

### **PCT**

# (10) International Publication Number WO 2005/049423 A2

(51) International Patent Classification<sup>7</sup>:

**B64D** 

(21) International Application Number:

PCT/CA2004/001927

(22) International Filing Date:

18 November 2004 (18.11.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/520,677 18 November

18 November 2003 (18.11.2003) US

- (71) Applicant (for all designated States except US): DISTRIBUTED THERMAL SYSTEMS LTD. [CA/CA]; 2085 Hurontario Street, Suite 300, Mississauga, Ontario L5A 4G1 (CA).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): HARRISON, Howard, R. [CA/CA]; 1302 Martley Drive, Mississauga, Ontario L5H 1N9 (CA).

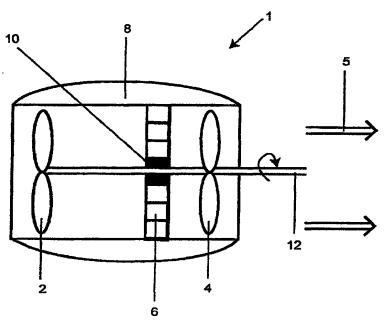
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Published:

 without international search report and to be republished upon receipt of that report

[Continued on next page]

(54) Title: COAXIAL PROPULSION SYSTEMS WITH FLOW MODIFICATION ELEMENT



(57) Abstract: A coaxial propulsion system has a primary propeller, a flow control element to reduce swirl, and a secondary propeller, mounted in series configuration. A connecting shroud directs the combined thrust. Said primary propeller and said secondary propeller may be connected to the same engine, or independent engines for greater reliability and performance. A coaxial jet fan system has a primary fan, a flow control element to reduce swirl, and a secondary fan, mounted in a series configuration. A connecting shroud directs the combined bypass and jet thrust. Further, a secondary shroud provides a primary bypass and a secondary bypass thrust, thereby establishing a greater level of control over the bypass ratio and engine efficiency.



## WO 2005/049423 A2



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.